Bearing for a set on/off roller in a printing press

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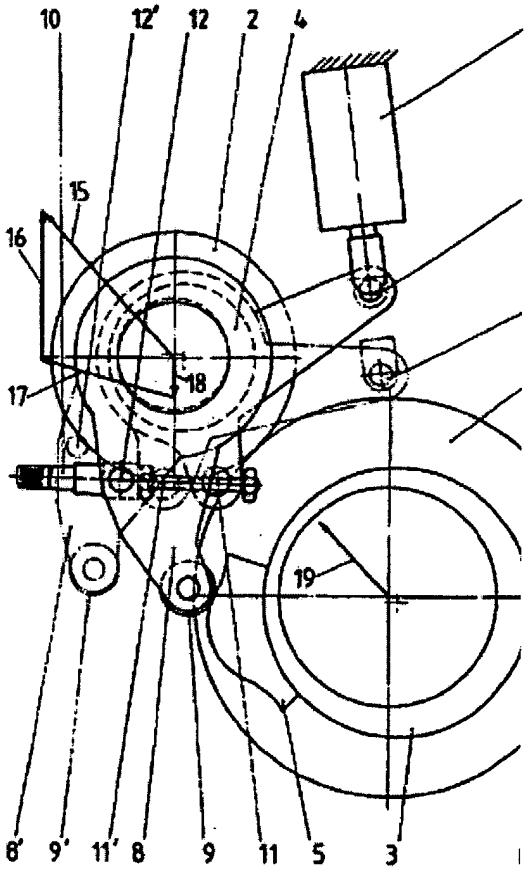
A bearing 4 for a set on/off roller 2 compensates for the channel shock force 19 of cylinder 1 by setting the direction of action of a resultant force 15 (formed by a combination of the force 16 of an actuation device 6, the force 17 of a roller 9 and the gravity force 18 of the roller 2) to act in the same direction as that of the shock force.



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(54) **Bearing for a set on/off roller in a printing press**

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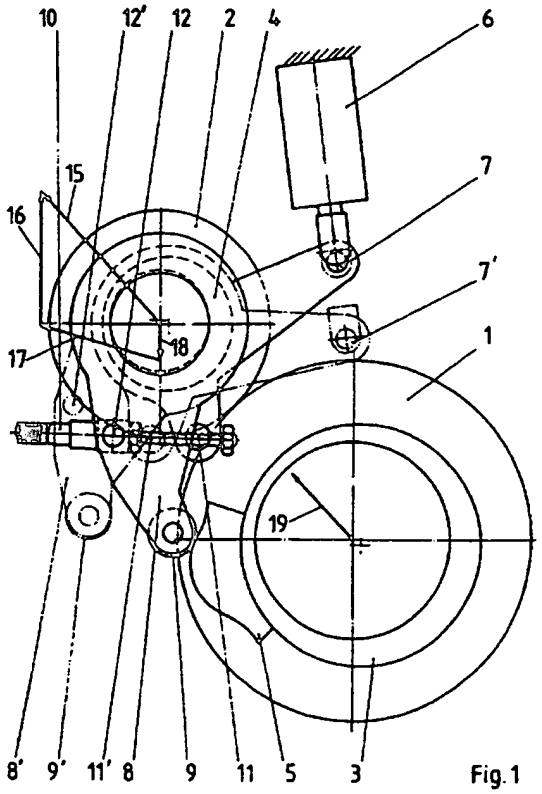

Fig.1

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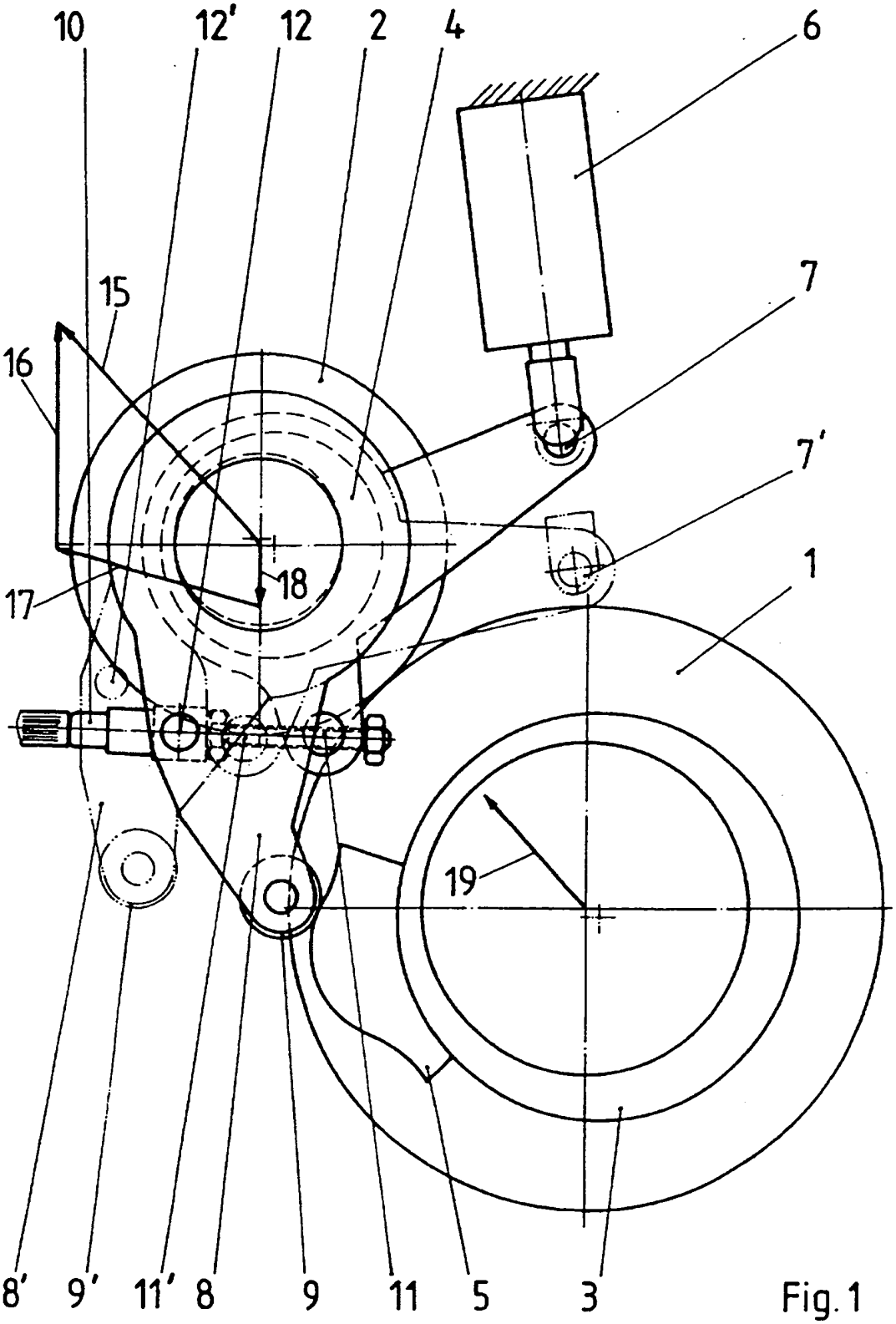

Fig. 1

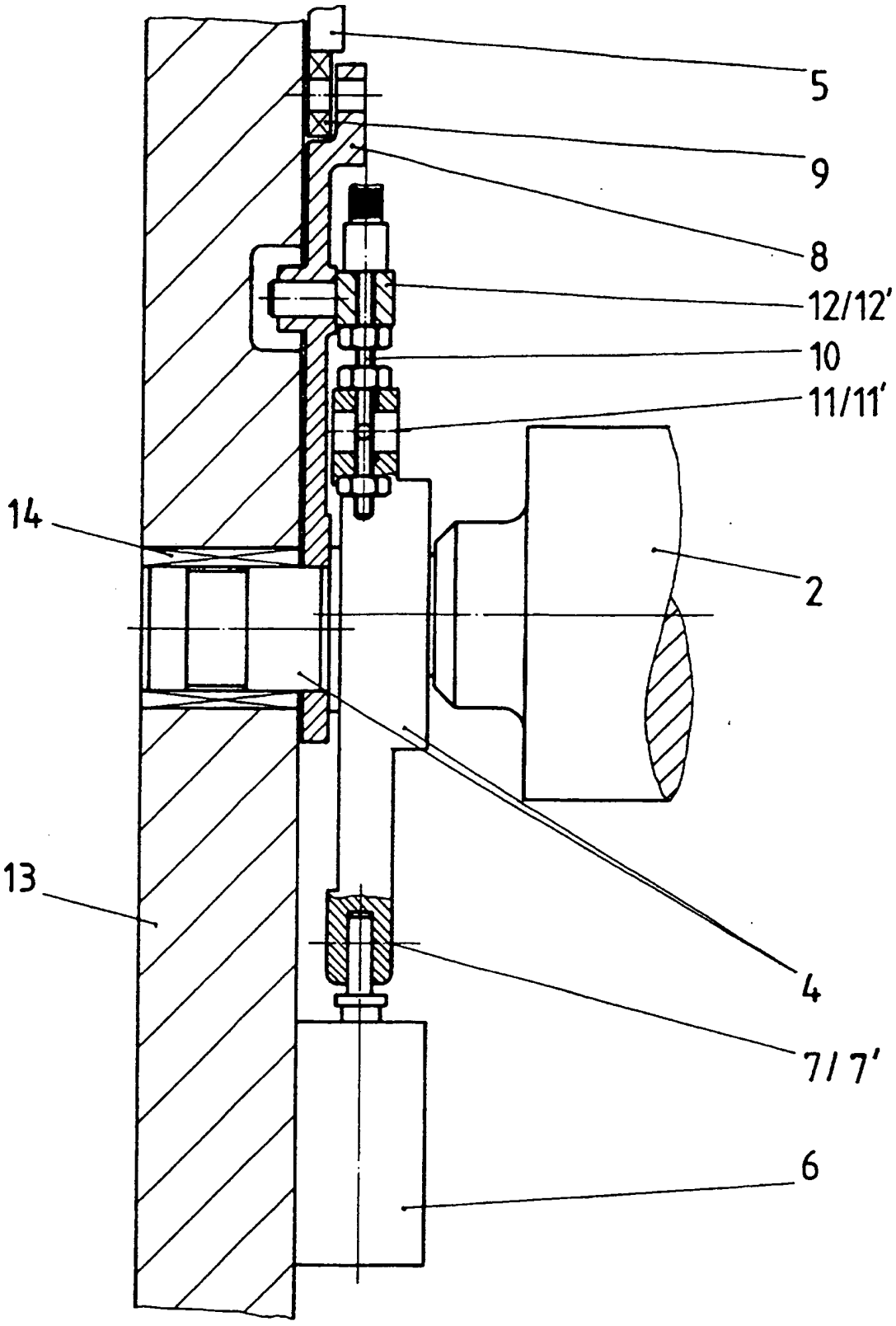

Fig. 2

BEARING FOR A ROLLER IN A PRINTING PRESS

The invention relates to a bearing for a roller in a printing press, particularly for a roller which can be set on and off, which can be brought directly or indirectly via the interposition of a further roller into contact with a cylinder having a channel.

A device of this type is known from EP 0 090 179 B1. On the bearing trunnions of the applicator roller and a neighbouring roller, spring loaded pressure pieces supported fixed with respect to the framework act against one another. Application roller and neighbouring roller (distributor roller) are tensioned against one another to compensate for bearing play in such a fashion that the shock arising from a channel passage is led directly into the frame wall.

A further bearing is known from DE 29 32 887 C2. According to this, a printing unit cylinder has a bow supported fixed with respect to the framework and drawn on to the cylinder axle stub, which carries a bearing. By means of a tensioning device, the bow can be allowed

to press against the bearing.

The shocks transferred during the passage of the channel on to the roller constitute stimulating forces which, on stronger stimulation (e.g. changes in the direction of the force), lead to frictional corrosion in the bearings. The appearance of frictional corrosion is denoted fretting corrosion.

If these rollers or cylinders are to be set on and off, a corresponding actuation device is additionally necessary. With rollers tensioned against one another, an individual set on and set off is only achievable with additional outlay. In the case of shock forces fed into the framework, as a result of the fitting play, frictional corrosion can arise just as before.

It is the object of the invention to create a roller bearing which - on passage of a cylinder channel - compensates for the impact forces promoting wear and which can be set on and off from the cylinder.

In accordance with the invention, there is provided a printing press including a roller mounted directly or indirectly via a further roller, against a cylinder including a cylinder channel, wherein the roller can be set on and off from the cylinder, and wherein roller and cylinder are mounted on both ends in side frames of the press, wherein the roller is mounted in roller bearings in a side frame, the bearings being rotatable via an actuation device fixed with respect to the frame and linked thereto and carrying a roller lever which can be brought into contact with a control cam mounted on a cylinder bearing, the arrangement being such that the

resultant force - formed from the direction of force of the actuation device, the direction of force of the roller and the force of gravity on the roller - is essentially identical to the direction of force of a cylinder channel shock.

The bearing in accordance with the invention is suited for a roller, for example an applicator roller, which is directly in contact with a cylinder having a channel. It is, however, also suitable for use in a roller arrangement with an intermediate roller as an additionally arranged transfer roller.

By the bearing, the shock forces are compensated in that the roller in the set on position is supported substantially play free in the roller bearing. That is achieved in that the resulting force from the direction of force of an actuation device, the direction of force of a roller with a roller lever as well as a gravitational force of the roller, is substantially identical to the direction of force of a shock generated by the cylinder channel. Jumping of the roller, stimulated by the channel passage of the cylinder, is accordingly avoided. In the set off position, the play free bearing is suspended. Furthermore, the possible frictional corrosion is counteracted in that the stimulating forces and possible chattering in the bearing are maintained low and are damped via the linkages (rotational pivots) of the roller bearings. By the substantial identity of the direction of action of the resultant and the direction of action of the stimulating force, the changes in the direction of force leading to frictional corrosion are predominantly compensated.

The invention is explained in more detail with reference to an exemplary embodiment shown diagrammatically in the accompanying drawings in which:

Figure 1 shows a roller and cylinder bearing in side view, and

Figure 2 the roller bearing in plan view.

In an offset printing press, an in-line varnishing unit is arranged downstream of the last printing unit seen in the sheet running direction. The varnishing unit consists essentially of a sheet guiding impression cylinder (not shown) and a cylinder 1 with a cylinder channel to which a roller 2 is arranged so that it can be set on and off. The cylinder 1 is, in the present example, a forme cylinder which carries a flexo-printing forme. The roller 2 is an applicator roller which, for example, is in contact with a further roller or a chamber doctor which meters the aqueous medium which is to be worked with, preferably a dispersion varnish or bronze effect printing ink. The cylinder 1 is adjustable in each case relative to the sheet guiding cylinder in an eccentric cylinder bearing 3 taken up in side frames 13. Arranged to each cylinder bearing 3 is a control cam 5, preferably adjustable. The roller is taken up in each case in a roller bearing 4 which can be set on and off in the side frames 13.

A roller bearing 4 is provided with a roller lock which for insertion of the roller 2 has a fixed bearing shell and a releasable half shell bearing shell. Furthermore, the roller bearing 4 includes a bearing trunnion which is received in the side frame 13 in a bearing 14. Roller

lock and bearing trunnion have an eccentricity relative to one another. The roller bearing 4 has two pivots 7, 11, e.g. constructed as eye type bearings. The first rotary pivot 7 is, in this connection, mated with the roller bearing 4 and an actuation device 6 fixed to the frame, e.g. a working cylinder. The second pivot 11 is mated with the roller bearing 4 and an adjusting device 10. The adjusting device 10 is mated via a further pivot 12 with a roller lever 8 concentrically surrounding the trunnion of the roller bearing 4. The roller lever 8 carries on its free end a roller 9 which can be set against the control cam 5 of the cylinder bearing 3. In a further development, the roller 9 can be adjustable eccentrically. The print adjustment of the roller 2 relative to the cylinder 1 is adjusted via the adjusting device 10.

The mode of operation is as follows: in the set off condition, the roller 2 is separated from cylinder 1. For this, the actuation device 6 is moved out and moves the roller bearing 4 so that the position of the rotary pivot is at 7'. The roller bearing 4, in this connection, simultaneously moves the adjusting device 10, with the position of the rotary pivot moving from 11 to 11'. Since the adjusting device 10 is linked with the roller bearing 4 and to the roller lever 8, this moves to position 8' (with the roller at 9').

In the set on condition, with actuation device 6 retracted, the roller 2 is in contact with the cylinder 1. The actuation device 6 moves in and takes the linkage with the roller bearing 4 to the position of rotary pivot 7, the linkage roller bearing 4 with the adjusting device 10 to the position of the rotary pivot 11 and the linkage

adjusting device 10 with roller lever 8 to the position of the rotary pivot 12. In this set on position, the roller bearing 4 and roller lever 8 are pre-tensioned toward roller 1, the force in the roller trunnion of the roller bearing 4 lying against the fixed frame bearing 14 being in the direction a resultant 15. For setting on and off the roller 2, the force of the actuation device 6 is introduced directly on to the linkage with the roller bearing 4 in the rotary pivot 7,7'. The direction of action of the setting on force is so chosen, in this connection, that the direction of action of the resultant 15 - formed from direction of force 16 of the actuation device 6, direction of force 17 of the roller 9,9' and the gravity force 18 of the roller 2 - against the roller bearing 4 is essentially identical with the direction of force 19 of a cylinder channel shock which acts on the roller 2 when the channel of the cylinder 1 goes past roller 2.

The construction is not restricted to the above-noted example. Rather, a simple bearing can already be achieved via a linkage (in the rotary pivot 7) from actuation device 6 with the roller bearing 4 and a roller lever 8 arranged against the roller bearing 4, which is supported with roller 9 against the control cam 5. Thereby, the resultant 15 is arranged always in substantially in the same direction of force 19 of the cylinder channel shock, or even identically directed. Rotary pivot 7, roller 9 (in engagement with control cam 5) and roller bearing 4 constitute a triangle of forces.

CLAIMS

1. A printing press including a roller mounted directly or indirectly via a further roller, against a cylinder including a cylinder channel, wherein the roller can be set on and off from the cylinder, and wherein roller and cylinder are mounted on both ends in side frames of the press, wherein the roller is mounted in roller bearings in a side frame, the bearings being rotatable via an actuation device fixed with respect to the frame and linked thereto and carrying a roller lever which can be brought into contact with a control cam mounted on a cylinder bearing, the arrangement being such that the resultant force - formed from the direction of force of the actuation device, the direction of force of the roller and the force of gravity on the roller - is essentially identical to the direction of force of a cylinder channel shock.

2. A press according to Claim 1 wherein the roller bearing has a second rotary pivot linked with an adjusting device and the adjusting device is linked via a rotary pivot with the roller lever arranged rotatably on the roller bearing.

3. A press according to Claim 2 wherein the adjusting device is adjustable.

4. A press according to any one of Claims 1 to 3 wherein the actuation unit is a working cylinder.

5. A press according to any one of Claims 1 to 4 wherein the control cam mounted on the cylinder bearing is adjustable.

6. A press according to any one of Claims 1 to 5 wherein the roller lever is settable with its roller to lie against the control cam when the roller is set against the cylinder.

7. A press according to Claim 6 wherein the roller is arranged eccentrically adjustable on the roller lever.

8. A printing press including a roller settable against a cylinder having a cylinder channel, both roller and cylinder being mounted in bearings in side frames of the press, and including a mechanism for adjusting the direction of force of the roller against the cylinder too be substantially in the direction of shocks generated by the channel of the cylinder on the roller substantially as hereinbefore described with reference to the accompanying drawings.

The Patent Office

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Application No: GB 9705106.4 **Examiner:** Gary Williams
Claims searched: 1-7 **Date of search:** 3 June 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B6C: CEDX

Int Cl (Ed.6): B41F: 13/26,31/30

Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
	NONE	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.